UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Title of the Invention

FOOTWEAR WITH IMPROVED INSOLE

Cross-Reference to Related Applications

There are no related applications.

Statements as to Rights to Invention Made Under Federally Sponsored Research and Development

The invention disclosed and claimed herein was not made under any federally sponsored research and development program.

A. Background of the Invention

1. Field of the Invention

This invention relates to footwear and more specifically to footwear having an improved insole.

2. Brief Description of the Prior Art

It is known in the prior art to produce footwear by the lasting process. In one type of lasting, referred to in the industry as flat lasting, an upper is placed on a last and the end portion of the upper is tightened around the periphery of the insole and cemented to the bottom of the insole. The insole provides a platform during this lasting process and it must be of sufficient thickness, rigidity and strength to withstand the force of the upper end portion as it is tightened around the periphery of the insole and cemented to the insole bottom. At the same time, it is desirable that the insole be light and flexible. There have been various approaches to providing improved insoles for use in such footwear lasting including, for example, the insoles disclosed in U.S. Pat. Nos. 2,144,340; 2,809,450; and 5,105,564.

After the upper and insole are lasted, an outsole is attached to the insole by molding the outsole to the insole, or by other means, and the last is removed from the completed shoe. Other intermediate steps that may occur during the lasting process include softening the upper in a heat chamber, forming a box toe, and trimming excess cement from the bottom of the insole.

It is also known in the prior art to include a cushioned insert on an insole to provide cushioning for the wearer of the footwear. In one such prior art footwear sold by Georgia Boot Inc., (the predecessor of the assignee of the present invention) under the name "Comfort Core Welt", a bottom extension on a cushioned insert was inserted into an opening in the insole. This footwear was produced by a lasting method known as the welt lasting method and the footwear included an outsole which was cemented to the footwear.

In the past, footwear outsoles were formed of light weight blown polyurethane material. However, no such footwear which included an insole having an opening therein included a polyurethane outsole. It is believed that the reason such otherwise desirable light weight

polyurethane outsoles were not used with insoles having openings therein, was because an objectionable amount of polyurethane would enter the footwear through the openings in the insole when the polyurethane formed the outsole.

B. Summary of the Invention

An insole having one or more openings is provided for use with an outsole formed of blown material such as polyurethane. To prevent an objectionable amount of blown material from entering the footwear, the openings in the insole are covered with expandable material. The expandable material covering the openings expands to receive the bottom extension of a cushioned insert. For purposes of illustration, a cushioned insert such as disclosed in U..S. Pat. No. 6,321,464 (see, insole 15) is described herein. It is expressly noted, however, that cushioned inserts having different bottom extensions than that disclosed in the aforementioned patent are within the scope of the present invention.

The insole of the present invention is of sufficient thickness, rigidity and strength to enable it to be used in the lasting process. The insole of the present invention is not, however, limited to its use in the lasting process and it may be used in footwear produced by processes other than by the lasting process.

In order to receive the bottom extension of a cushioned insert such as disclosed in U.S. Pat. No. 6,321,464, a forepart section of the insole includes an inner portion of expandable material covering an opening in the forepart section. The expandable material is attached to a relatively rigid peripheral outer portion of the forepart section. Similarly, the backpart section of the insole also includes an inner portion of expandable material covering an opening. The expandable material of the backpart section is attached to a relatively rigid peripheral outer

portion of the backpart section. The expandable material of the forepart section and the expandable material of the backpart section limit the amount of blown material that will enter the footwear during the outsole forming process to an acceptable level.

Accordingly, it is an object of this invention to provide footwear with an improved insole; and

It is a further object of this invention to provide footwear with an improved insole having at least one covered opening therein to limit the amount of blown material utilized to form the outsole from entering the footwear.

Other objects and attendant advantages of this invention will be readily appreciated as the same becomes more clearly understood by references to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof.

C. Brief Description of the Drawings

FIG. 1 is a top plan view of the insole of the present invention;

FIG. 2 is a bottom plan view of the insole of the present invention;

FIG. 3 is a side elevational view of the insole of the present invention;

FIG. 4 is a left side elevational view of the insole of the present invention attached to a last for forming the upper and insole;

FIG. 5 is a left side elevational view of the upper;

FIG. 6 is a left side elevational view of the last for forming the outsole;

FIG. 6A is a rear elevational view of the last for forming the outsole;

FIG. 7 is a left side sectional view of the last for forming the outsole, the upper and insole, the mold for forming the outsole and the outsole which has been formed;

FIG. 8 is a left side elevational view of the footwear produced by the present invention;

FIG. 9 is a left side elevational view of a cushioned insole for use in the footwear produced by the present invention;

FIG. 9A is a top plan view of the cushioned insole shown in FIG. 8;

FIG. 9B is a rear elevational view of the cushioned insole shown in FIG. 8; and

FIG. 10 is a left side sectional elevational view of the footwear produced by the present invention including the cushioned insole.

D. Detailed Description of the Preferred Embodiments

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing forming a part of this specification and in which similar numerals of reference indicate corresponding parts in all the figures of the drawing.

With reference to FIG. 1, 2, and 3 there is shown an insole **2** including a forepart section **4** and a backpart section **6**. The forepart section **4** and backpart section **6** may be secured together by rivets **8**. The forepart portion **4** includes a shaped bottom **5** (see FIG. 3) and comprises a relatively rigid peripheral outer portion **10** formed of fiberboard or other firm, yet flexible, insole material. Outer portion **10** surrounds an inner portion **12** formed of expandable material, such as the stretchable fabric sold by Invista Inc., under the registered trademark "LYCRA." The fiberboard may be the type sold by Texon International, under the trademark

"TEXON." The peripheral outer portion **10** and the inner portion **12** may be secured together by zigzag stitching **14** and/or cement.

The backpart portion **6,** includes a shaped bottom **7** (see FIG. 3) and may be formed of relatively hard fiberboard or thermoplastic. A strip **13** of cloth material extending across and attached to the peripheral outer portion **10** by zigzag stitching, assists in preventing insole **2** from spreading apart during the lasting process. Backpart portion **6** which may be a thermoplastic urethane includes expandable material **16** in the heel area which may also be "LYCRA" stretchable fabric. The periphery **18** of expandable material **16** is secured to the backpart portion **6** by adhesive. Backpart portion **6** includes an integral stiff shank **20** for supporting the arch.

The manner in which the insole **2** of the present invention is utilized in a footwear lasting process is next described. With reference to FIG. 4, it is seen that insole **2** is secured to last **22**, which may be plastic, by known means such as tacking the backpart section **6** to the bottom of last **22** with tacks **23**, and taping the forepart portion **4** to the bottom of last **22** by tape **25**. Upper **24** shown in FIG. 5 includes an end portion or lasting allowance **26** which is a fabric formed of strong, durable and flexible material such as nylon. Lasting allowance **26** extends below upper **24** and is attached to the inside of the upper **24** by stitching **28**.

Last **22**, including insole **2**, is inserted into upper **24** so that insole **2** extends through the opening at the bottom of upper **24**. If the boot is to include a box toe, upper **24** may be placed in a steamer to first soften the leather. Then the box toe may be inserted between the vamp and upper, and a toe box machine may apply heat and pressure to the toe box in known manner.

In the lasting process, the lasting allowance **26** of upper **24** is tightened around and beneath the periphery of insole **2** and is cemented into engagement thereto in known manner. A

protective piece of foam, sponge type material may be placed on top of the upper to prevent scraping, scarring or discoloration of the leather when an upper clamp is pressed against the leather during the lasting process. Further, as is well known in the art, the sides of the lasting allowance **26** may be hand lasted to the sides of the insole **2.** Any excess glue remaining on the bottom of insole **2** after the lasting process is scraped off so that the wearer of the footwear does not feel any uncomfortable bulges when wearing the footwear.

Last **22** is then removed from the upper **22** and upper **22** with the insole lasted thereto is placed over a second last **30** shown in FIGS. 6A and 6B. Last **30,** which may be metallic, is known in the industry as a foot form, and includes forepart extension **31** and a heel extension **32.** The upper **24** is placed over last **30** so that forepart extension **31** of last **30** is inserted into the expandable material **12** and heel extension **32** of last **30** is inserted into the expandable material **16** of insole **2**. In this manner expandable material 12 expands to the shape of forepart extension **31** and expandable material **16** expands to the shape of heel extension **32**.

In FIG. 7, the drawing is sectioned to show forepart extension **31** inserted in expandable material **12** and heel extension **32** inserted in expandable material **16**. Last **30** is seated on sole frame **36** and sole plate **38,** is moved upwardly so that the top of the sole plate **38** is in contact with the bottom of upper **24**. The material from which the outsole **34** is formed, which may, for example, be polyurethane, is injected into hollow cavity **35,** in the sole plate **38** to form the outsole **34**.

The forepart extension **31** of last **30** creates the corresponding forepart depression **35** in outsole **34** and the heel extension **32** of last **30** creates the heel opening **33** in outsole **34**. It will be appreciated that expandable material **12** and expandable material **16** will limit the amount of injected polyurethane that may seep into footwear **40.** When the outsole **34** is formed, the

formed footwear **40** is removed from sole frame **36** and is removed from the last **30.** Expandable material **12** and expandable material **16** will remain fixed in their expanded state.

Footwear **40** includes cushioned insert **42** shown in FIGS. 9, 9A and 9B which is of the type disclosed in U.S. Pat. No. 6,321,464, but, as previously noted, other cushioned inserts having other bottom extensions are also contemplated by the present invention. Cushioned insert **42** may be separately molded from polyurethane. A bottom extension **43** of cushioned insert 42 includes a front portion **44**, an intermediate portion **46** and a heel portion **48**. The bottom extension **43** is configured to fit on top of insole **2**. The upper portion **50** of cushioned insert **42** includes contoured surfaces **52** to accommodate the wearer's foot. The top surface of cushioned insert **42** includes a thin layer of fabric **54** or other suitable lining material along its entire surface, only a section of which is shown in FIG. 9A. Holes **56** are provided in cushioned insert **42** to assist in maintaining the wearer's feet in a cool and dry condition.

In FIG. 10, it is seen that the front portion **44** of cushioned insert **42** overlies the forepart portion **4** of insole **2**, the lower intermediate portion **46** of insert **42** overlies the shank **20**, and the heel portion **48** is received within expandable maerial **16**, in its expanded position, and fits within heel opening **33** in outsole **34**.

This invention has been described above with reference to presently preferred embodiments of the invention; such description has not been presented as a catalog exhaustive of all forms which this invention may take. Accordingly, workers skilled in the art to which this invention pertains will readily appreciate that variations, alterations or modifications in the structures, procedures, and arrangements described above may be practiced without departing from the scope of this invention. Thus, the foregoing description should not be read as limiting the scope of this invention to less than the fair scope of the invention.